



New species of *Chimerothalassius* Shamshev & Grootaert (Diptera: Dolichopodidae: Parathalassiinae) from the West Indies and Costa Rica

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Abstract

Chimerothalassius runyoni **sp. nov.** is described from rocky coastlines of Montserrat and Dominica, and the genus is newly recorded from the Pacific coast of Costa Rica, based on female specimens of an undescribed species.

Key words: Empidoidea, Dolichopodidae, Parathalassiinae, *Chimerothalassius*, Neotropical, Montserrat, Dominica, Costa Rica, Caribbean, new species

Introduction

Chimerothalassius Shamshev & Grootaert is a rarely collected genus of minute dolichopodid flies (< 2 mm) classified within the subfamily Parathalassiinae, which is the putative sister group to the Dolichopodidae *sensu stricto* (Sinclair & Cumming 2006). The genus was established for the single species *Chimerothalassius ismayi* Shamshev & Grootaert (2002) that inhabits stony beaches of coastal New Zealand. *Chimerothalassius* is part of a distinctive subgroup of parathalassiine genera, including *Neothalassius* Brooks & Cumming, which possess reduced wing venation; i.e., with veins M_2 , dm-m and cell dm absent (Brooks & Cumming 2011, 2016).

In their review of the New World genera of Parathalassiinae, Brooks & Cumming (2011) provided the first New World record of *Chimerothalassius* from the island of Dominica (Lesser Antillies) based on a single female specimen and a slide-mounted wing of an undescribed species. They provided a diagnosis of the species, but did not formally describe it indicating the need for additional specimens, especially males. Since then, collecting efforts on the nearby island of Montserrat by dolichopodid worker Justin Runyon have yielded further specimens of this undescribed species, including males. Additionally, several female specimens of yet another undescribed species of *Chimerothalassius*, collected from the west coast of Costa Rica by dipterist Art Borkent, have been discovered in the Canadian National Collection of Insects. The purpose of this paper is to formally describe the new species of *Chimerothalassius* from Dominica and Montserrat in light of the discovery of males, and to record the genus from the Central American mainland based on the newly discovered Costa Rican female specimens. A revised generic diagnosis of *Chimerothalassius* is also provided.

Material and methods

Specimens examined in this study are deposited in the Canadian National Collection of Insects, Ottawa, Canada (CNC), the University of Guelph Insect Collection, Guelph, Canada (UGIC), and the United States National Museum of Natural History, Washington D.C., USA (USNM). Primary type label data are cited verbatim and are listed from the top label downward, with data from each label placed in quotation marks and separated from data on other labels by a semicolon. Lines on labels are delimited by a slash (/) with additional information included in square brackets, i.e. [].

Terms used for adult structures and male genitalic homologies follow Cumming & Wood (2017) and previous papers on Parathalassinae (e.g., Brooks & Cumming 2017; Brooks & Ulrich 2012). Macrotrichia are referred to as bristles, setae, setulae and hairs depending on relative decreasing size.

Male and female terminalia dissections were macerated either in 85% lactic acid heated in a microwave oven for multiple 20–30 second intervals until muscle tissue was dissolved, or in hot 5% KOH for 2–4 minutes followed by immersion in hot 85% lactic acid to stop the clearing action of the KOH. Terminalia were transferred to glycerine following maceration.

To facilitate detailed study of the head, thorax and legs of *C. runyoni* **sp. nov.**, a single male and single female from the type series were carefully removed from their pins (using ethyl acetate to dissolve shellac glue if necessary) and immersed in hot 5% KOH for 2–4 minutes. These specimens were subsequently submerged in hot 80% lactic acid, prior to being transferred to glycerine. Treatment with KOH in this manner resulted in “re-inflation” of the specimens that had shrivelled due to air-drying.

Wing slides were made by placing a dissected wing into glacial acetic acid overnight, followed by transfer to a bath of 2-propanol immediately prior to its transfer to a drop of euparal on a slide. A fine probe was used to position the wing prior to application of coverslip.

As in previous papers (e.g., Brooks & Cumming 2017; Brooks & Ulrich 2012), figures of male genitalia in lateral view are oriented with the anatomically dorsal and ventral parts directed towards the top and bottom of the page, respectively, following Sinclair & Cumming (2006, figs 347–350).

Systematics

Genus *Chimerothalassius* Shamshev & Grootaert

Chimerothalassius Shamshev & Grootaert, 2002: 131. Type-species: *Chimerothalassius ismayi* Shamshev & Grootaert, by original designation.

Diagnosis. *Chimerothalassius* is distinguished from other parathalassinae genera by the following characters: head with gena scarcely projected below eye, pair of fronto-orbital bristles close to base of antennae, mouthparts directed ventrally with fleshy labellum, palpus elongate and narrow with long ventral bristles or broadly subtriangular and lacking ventral bristles; thorax with prosternum fused to proepisternum forming precoxal bridge, scutellum with 1 pair of strong dorsally directed bristles near apex; legs with fore coxa usually bearing prominent basal bristle or several long setae, lacking field of short stout spinose setae on anterior surface, tarsomere 5 of each leg with medial apical projection; wing with costa bearing double row of short spine-like setae along anterior margin, R_1 short reaching costa before middle of wing, crossvein $bm-m$ complete or incomplete, cell dm absent without veins M_2 and $dm-m$, CuA rounded, cell cua convex apically, $CuA+CuP$ absent or vestigial, anal lobe not developed; male terminalia with hypopygium small, right and left epandrial lamellae apparently fused with hypandrium, left epandrial lamella with non-articulated ventral process, postgonites cradling base of phallus with left and right lobes protruding out from between dorsal and ventral surstylar lobes, cerci short and symmetrical or nearly so; female abdomen with apical segments retracted into segment 5, terminalia with tergite 10 bearing acanthopore setae, cercus narrowly rounded apically with prominent apical or preapical seta.

Distribution and habitat. *Chimerothalassius* is now known from coastal localities on the Caribbean islands of Dominica and Montserrat (*Chimerothalassius runyoni* **sp. nov.**), the western coast of Costa Rica (*Chimerothalassius* sp.) (Fig. 19), and South Island, New Zealand (*C. ismayi* Shamshev & Grootaert) (Brooks & Cumming 2011, fig. 12A). The genus appears to be restricted to rocky or stony habitats of coastal beaches (Fig. 1).

Remarks. Shamshev & Grootaert (2002) noted great sexual dimorphism in the chaetotaxy of the palpus and foreleg of the type species, *C. ismayi*, which is not seen in the newly described species, *Chimerothalassius runyoni* **sp. nov.** (see Description and Remarks for this species below). We have examined specimens of two additional undescribed species from South Island, New Zealand (1 male, UGIC; 1 female, USNM) and comparison with a male of *C. ismayi* from Port Levy (UGIC), suggests that the type series of *C. ismayi* (8 males and 14 females) may be comprised of two different species, one for each sex. Even though the type specimens of *C. ismayi* were all collected from a single stony beach on the same day, we suspect that the holotype and remaining male paratypes belong to *C. ismayi*, whereas the female paratypes belong to one of the additional undescribed species.

Recognition of the two new species from New Zealand, and the new species from Costa Rica brings the total number of known species of *Chimerothalassius* to five; however, formal description of these species must await the collection of additional specimens.

***Chimerothalassius runyoni* sp. nov.**

(Figs 1–9, 11–16, 19–21)

Type material. **HOLOTYPE** ♂, labelled: “WEST INDIES: MONTSERRAT/ Woodlands Beach/ rocks in intertidal zone/ N16°45.817' W62°13.384'/ 21 JUNE 2017, JB Runyon”; “HOLOTYPE/ *Chimerothalassius runyoni*/ Brooks & Cumming [red label]” (CNC). **PARATYPES: MONTSERRAT:** same data as holotype (1♂, 3♀, CNC); same data as holotype except, 22.vi.2017 (2♂, CNC); same data as holotype except, 20.vi.2017 (10♀, CNC).

Other material examined. DOMINICA: Saint Joseph Parish: Layou River mouth [ca. 15°23.7'N 61°25.5'W], 9.i.1965, W.W. Wirth, sea shore, Bredin-Archbold Smithsonian Biological Survey, Dominica (1♀, USNM); Saint Joseph Parish, Rodney's Rock [ca. 15°22.818'N 61°24.707'W], 5.ii.1964 [H. Robinson] (slide-mounted wing, USNM).

Diagnosis. *Chimerothalassius runyoni* sp. nov. is distinguished from other known species of the genus by the following combination of features: body brown; head with lower 6–7 postocular bristles strong, long and pale (Figs 2–4); palpus elongate and narrow with pair of elongate preapical ventral bristles; legs infusate distally with coxae, trochanters and basal half of femora yellow; fore coxa with row of 3 long fine pale setae on anterior surface (Fig. 5); fore femur with 1 strong pale basiventral bristle; wing about 2.7X longer than wide, with basal portion of costa bearing group of 3–4 bristles above branching point of R_{2+3} and R_{4+5} (Figs 7–9); costal section between R_{2+3} – R_{4+5} subequal to R_{4+5} – M_1 section; male terminalia with phallus bifurcate, cercus subtriangular in dorsal view, right and left cerci symmetrical (Figs 11–13).

Description. Male. Wing length 1.15–1.25 mm (holotype and male paratypes). Body (cf. Fig. 2) dark brown; legs infusate distally with coxae, trochanters and basal half of femora yellow; major bristles of head (i.e., fronto-orbitals, anterior ocellars, postocellars, verticals) and thorax (i.e., dorsocentrals, supra-alars, notopleurals, postalars, scutellars) black unless otherwise noted, other smaller setae dark unless otherwise noted. **Head** (Figs 3–4): Dark grey-brown. Broader than thorax in dorsal view; ovoid, slightly broader than high in lateral view (Fig. 4), about 1.6X broader than high in anterior view (Fig. 3). Neck inserted slightly above middle of head. Ocellar triangle conspicuous. Occiput weakly concave on upper median part above occipital foramen. Dichoptic; eyes entirely covered with ommatrichia, medial edge with emargination adjacent to antenna, ommatidia progressively smaller anterodorsally, eye ovoid in lateral view, broader than high, posteroventral margin straight. Frons dark grey-brown, nearly 4X broader than high, widening above. Face and clypeus concolourous with frons. Face narrowest at middle, about 2.0X width of anterior ocellus. Clypeus with upper margin delineated from face, broader than high, widening below, lower margin truncate, ending above lower margin of eyes. Gena very narrow. Postgena narrow. Bristles of head well-differentiated, each side with: 1 fronto-orbital bristle close to base of antenna, 1 anterior ocellar bristle, 2 short posterior ocellar setae; 1 postocellar bristle, 1 vertical bristle; 2 postvertical bristles; postocular setae arranged in single row, upper 3–4 setae short and dark, lower 6–7 bristles strong long and pale. Antenna (Figs 3–4) brown, inserted above middle of head in profile; scape short, funnel-shaped; pedicel larger and slightly longer than scape, spheroidal with subapical circler of setulae; postpedicel about 2X longer than wide, bulb-shaped with rounded basal half and strongly tapered and narrowed distal half, clothed in fine hairs; stylus arista-like, about 3X longer than postpedicel. Palpus brown, elongate and narrow, clothed with minute pile, apical portion setose with pair of long pale preapical ventral bristles, sensory pit absent. Proboscis directed posteriorly with broad fleshy setose labellum, pseudotracheae indistinct. **Thorax:** Dorsum dark brown, pleuron dark brown-grey. Mesoscutum moderately arched, prescutellar depression present. Prosternum fused with proepisternum forming precoxal bridge. Proepisternum with lower bristle. Postpronotal lobe distinct with 1 small seta. Mesonotum shield-shaped in dorsal view, slightly longer than wide. Acrostichal setae absent; other bristles of thorax well-differentiated, each side with: 4 strong dorsocentral bristles with 1 small seta between some bristles, 1 small presutural supra-alar seta (close to anterior notopleural bristle), 1 strong postsutural supra-alar bristle with small seta anteriorly, 2 strong notopleural bristles sometimes with 1 small seta in-between, and 1 small postalar

seta; scutellum broadly subtriangular with pair of strong erect inclinate bristles near apex. Mesopleuron bare. Halter with dark brown knob and yellow stem. **Legs:** Coxae and trochanters yellow; femora yellow in basal half, infuscated apically; tibiae and tarsi infuscated; coxae and trochanters with pale setae; femora, tibiae and tarsi mostly clothed with dark setae, devoid of well-differentiated bristles (except foreleg); tarsal claws, pulvilli and empodium normally developed on all legs; tarsomere 5 of fore, mid and hind legs with medial apical projection (Fig. 6). *Foreleg* (Fig. 5): Coxa with row of 3 long fine pale setae on anterior surface; femur with 1 strong pale basiventral bristle; tibia slightly shorter than femur, with apical comb-like row of closely-spaced setae on anterior surface; tarsus subequal in length to femur; tarsomere 1 shorter than combined length of tarsomeres 2–5; tarsomere 2 and 3 subequal, tarsomere 4 shorter; tarsomere 5 slightly longer than tarsomere 2. *Midleg:* Coxa with 2 anterior setae and 1 anterolateral seta; femur subequal in length to tibia, tarsus slightly longer; tibia with short apicoventral bristle; tarsomere 1 subequal to combined length of tarsomeres 2–5; tarsomeres 2–4 decreasing in length apically; tarsomere 5 subequal in length to tarsomere 2. *Hindleg:* Coxa with 1 anterior seta and 2 setae on lateral surface; femur slightly longer than tibia; tibia with apical comb-like row of closely-spaced setae on posterior surface; tarsus subequal in length to femur; tarsomere 1–4 gradually decreasing in length apically; tarsomere 5 subequal in length to tarsomere 3. **Wing** (Fig. 9): Hyaline, veins brown, about 2.7X longer than wide. Pterostigma absent, membrane entirely covered with minute microtrichia, alula absent. Costa (C) circumambient with strong bristle at extreme anterior base (cf. Figs 7–8), basal portion with 1 anterodorsally projecting and 2 dorsally projecting bristles above branching point of R_{2+3} and R_{4+5} . Anterior section of costa (between base and R_{4+5}) bearing double row of spine-like setae. Posterior section of costa (i.e., beyond R_{4+5}) with setae finer and longer. Longitudinal veins complete, reaching wing margin. Sc faint. R_1 straight, running very close to C for most of its length, reaching costa before middle of wing, well before termination point of M_4 . R_{2+3} diverging from R_{4+5} in basal part, gradually curved posteriorly to run subparallel to R_{4+5} for most of length. R_{4+5} nearly straight. M_1 diverging from R_{4+5} , nearly straight with slight posterior curve in apical portion. Costal section between R_{2+3} – R_{4+5} subequal to R_{4+5} – M_1 section. M_2 absent. M_4 diverging from M_2 , mainly straight with slight posterior curve in apical portion. Base of Rs originating opposite humeral crossvein. Crossvein r-m indiscernible. Crossvein bm-m appearing incomplete, depigmented at junction point with M_1 . Crossvein dm-m and cell dm absent. Cells bm and cua small, near base of wing, subequal in length and width. Cell cua closed with distal end rounded. Vein CuA+CuP absent. Calypter with fine seta. **Abdomen:** Dark brownish black. Abdominal plaques present, prominent on lateral margins of tergites 2–4; tergite and sternite 2 with transverse band of plaques anteriorly. Tergites 1–6 and sternites 1–5 with short setae along posterior surface, otherwise mostly bare, sternites 4 and 5 with some longer setae, sternite 6 bare. Segment 7 bare. Segment 1 reduced and very short; segments 2–4 mostly symmetrical with simple tergites and sternites, segment 2 relatively long; segments 5–7 narrowed and laterally compressed to form cavity on right side for hypopygium. Sternite 5 reduced to narrow band-like sclerite along anterior and lateral margins, without projecting pregenitalic process. Tergite 7 narrower than sternite, with broad posteromedial emargination. Sternite 8 suboval, forming dome-like cap over anterodorsal region of hypopygium, with pair of strong setae on posterior half and several short setae near base; tergite 8 indistinct. **Hypopygium** (Figs 11–13): Brown with cerci and other projecting sclerites pale. Lateroflexed to right; inverted with posterior end directed anteriorly; small and compact, about 1/4 length of abdomen; asymmetrical; foramen not formed. Epandrium divided into left and right lamellae. Left epandrial lamella (Fig. 11) partially overlapping left side of hypandrium, posterior margin trifurcate, ventral margin fused with hypandrium but epandrial margin distinct; ventral epandrial process present, apparently not articulated at base, elongate with acute hooked apex. Left surstylus bilobed, dorsal and ventral lobes separated by deep U-shaped cleft through which left postgonite lobe protrudes. Dorsal lobe of left surstylus broad with rounded apex, with large preapical dorsal seta, slightly larger subapical seta and tiny apical seta, lacking preniseta. Ventral lobe of left surstylus narrow, as long as dorsal lobe, with short apical seta and similarly-sized seta lateroventrally. Right epandrial lamella (Fig. 12) partially overlapping right side of hypandrium, subrectangular, fused with hypandrium along lower margin, ventral epandrial process absent. Right surstylus bilobed, dorsal and ventral lobes separated by deep U-shaped cleft through which right postgonite lobe protrudes. Dorsal lobe of right surstylus broad with rounded apex, with large preapical dorsal seta, subequal subapical seta and small apical seta, lacking preniseta. Ventral lobe of right surstylus digitiform, about 2X longer than dorsal lobe, basal margin with 3 long setae, with short setae near apex. Hypandrium bowl-shaped. Postgonite with basal internal portion cradling base of phallus and ejaculatory apodeme, left and right postgonite lobes large and protruding out from between dorsal and ventral lobes of surstylus. Left postgonite lobe broad with dorsal seta near middle and long narrow curved tip. Right postgonite

lobe similar to left lobe but with shorter tip. Phallus tubular, J-shaped, bent upwards, bifurcated near midlength with shorter narrow ventral branch. Ejaculatory apodeme rod-like. Hypoproct (Figs 11–13) projected as a pair of broad apically rounded symmetrical lobes. Cercus (Figs 11–13) small with acute apex, subtriangular in dorsal view, with strong inclinate preapical seta and 2–3 adjacent setae, right and left cercus symmetrical.



FIGURES 1–2. Type locality habitat photograph and female habitus of *Chimerothalassius runyoni* **sp. nov.** **1.** Rocky coastal type locality at Woodlands Beach, Montserrat (photo by Justin Runyon). **2.** Female specimen from Layou River mouth, Dominica collected by W.W. Wirth, January 9th, 1965.

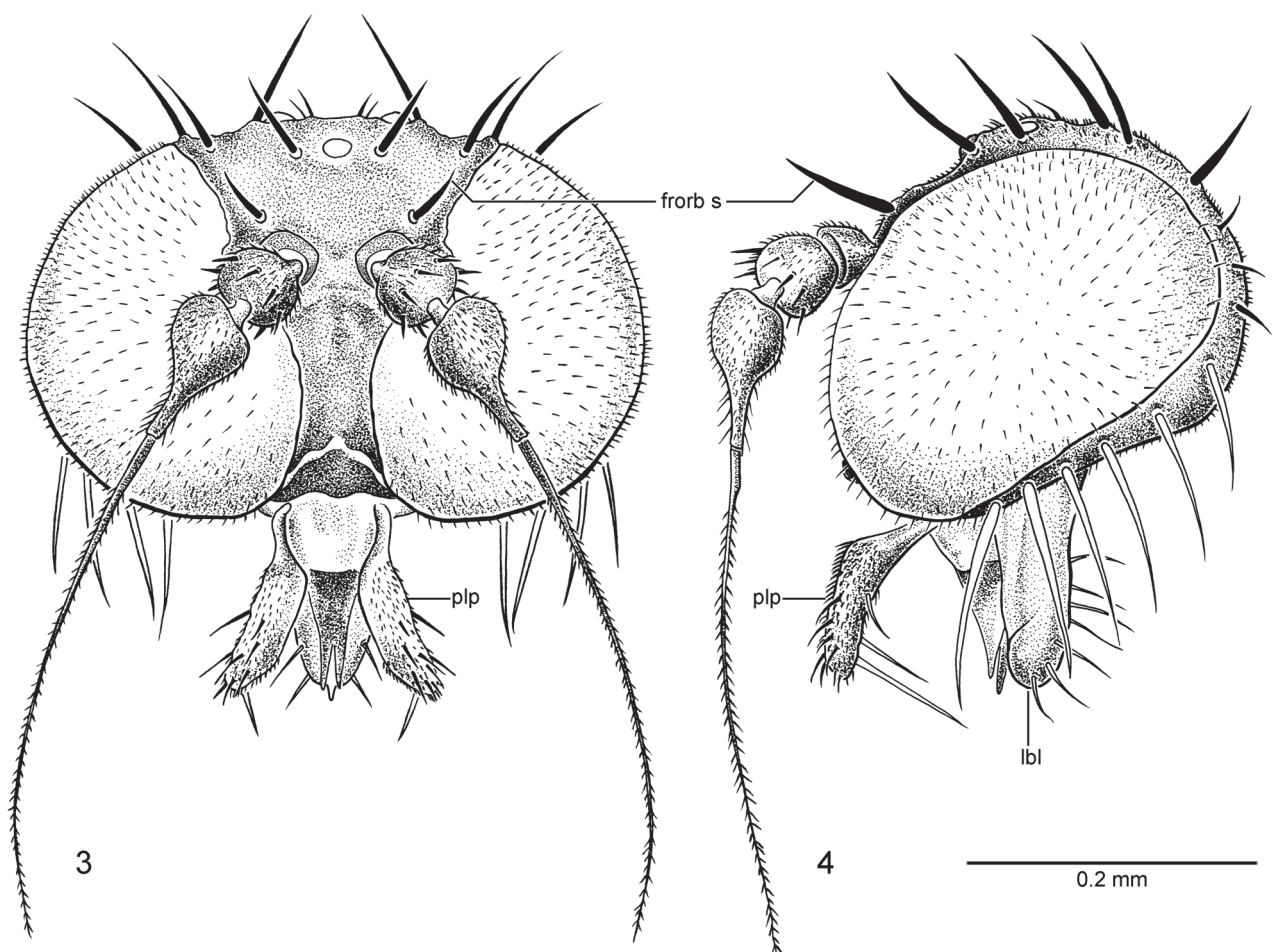
Female (Fig. 2). Wing length 1.35–1.50 mm (female paratypes). Similar to male except as follows: **Legs:** Coxae and femora infuscated, concolourous with tibiae and tarsi. **Abdomen:** Tapering posteriorly, apical segments retracted into segment 5. *Terminalia* (Figs 14–16) with tergite 8 medially divided, narrowly fused with sternite 8 anterolaterally; tergite 10 medially fused with three acanthophorite setae on each side; cercus narrow blunt-tipped with long preapical ventral seta and several short setae; spermathecal duct an unsclerotized tube with broad ridged sperm pump in basal part and conical terminal expansion.

Etymology. The species name honours our colleague and fellow empidoid worker Dr. Justin B. Runyon, who collected the type series from Montserrat.

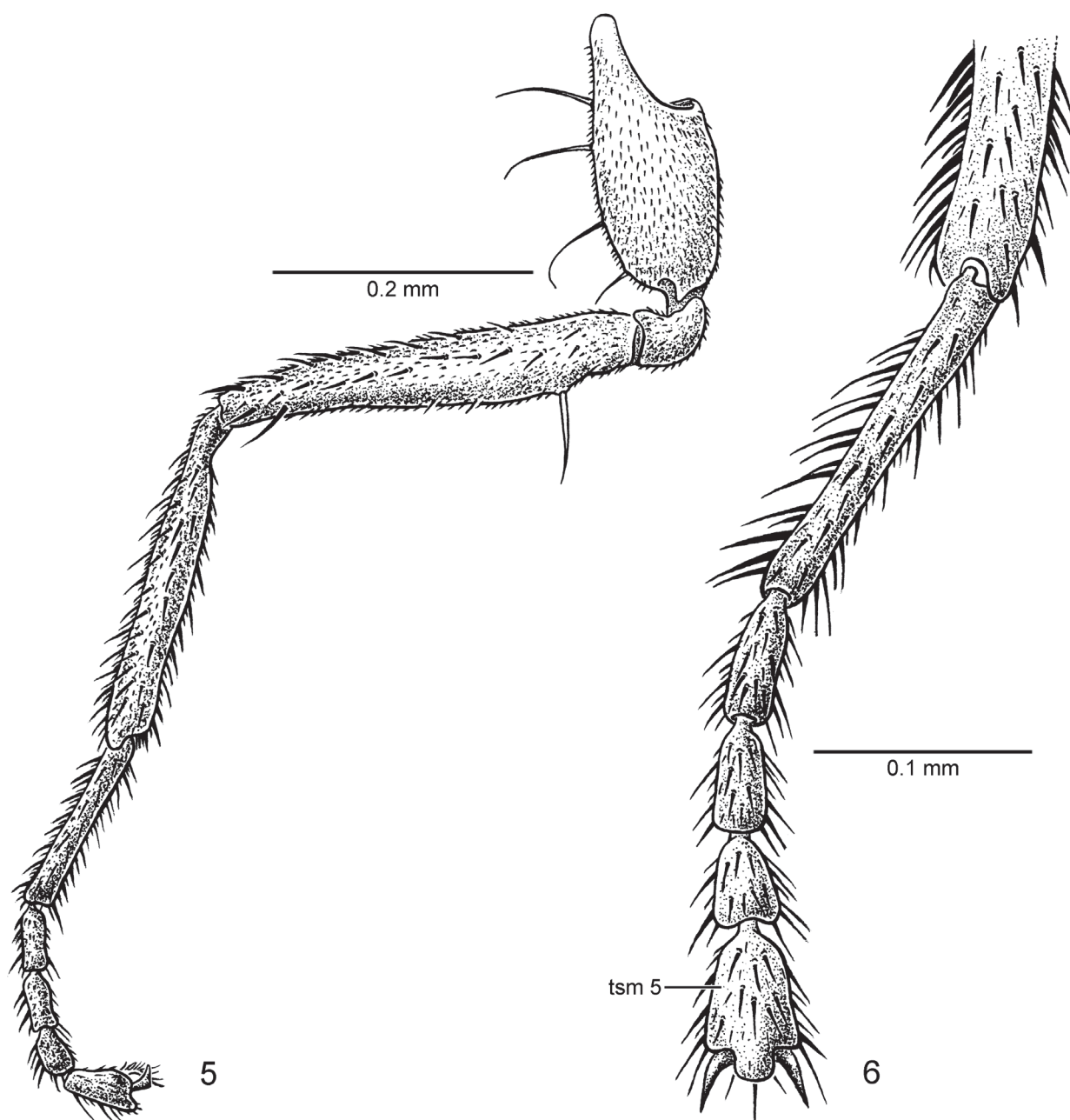
Distribution. *Chimerothalassius runyoni* **sp. nov.** is currently known to occur along rocky intertidal zones on the western coastlines of Montserrat and Dominica (Figs 19–21).

Remarks. *Chimerothalassius runyoni* **sp. nov.** was initially reported from Dominica (as *Chimerothalassius* sp.) by Brooks & Cumming (2011, pp. 443–444), based on W.W. Wirth's female from the Layou River mouth (Fig. 2) and H. Robinson's slide-mounted wing (sex unknown) from Rodney's Rock (Fig. 7). The Dominica specimens appear virtually identical to the specimens from Montserrat, although they are slightly larger (wing length 1.45–1.60 mm). Robinson (1975, p. 2) stated that many species of Dolichopodidae *sensu stricto* found in the Lesser Antilles are widely distributed through the islands, especially those occurring in marine habitats. We are currently treating the specimens from both islands as conspecific, but this will require additional confirmation through at least discovery of male specimens from Dominica.

Both the male (Fig. 4) and female palpus and foreleg of *C. runyoni* **sp. nov.** are not dimorphic in terms of chaetotaxy, as was described and figured for *C. ismayi* by Shamshev & Grootaert (2002, figs 3–4, 11–12) (but see Remarks under *Chimerothalassius* above).



FIGURES 3–4. *Chimerothalassius runyoni* **sp. nov.**, male head. **3.** Anterior view. **4.** Lateral view. Abbreviations: forb s—fronto-orbital bristle; lbl—labellum; plp—palpus.



FIGURES 5–6. *Chimerothalassius runyoni* **sp. nov.**, foreleg. **5.** Male left foreleg, posterior view. **6.** Female left foreleg, apex of tibia and tarsus, dorsal view. Abbreviation: tsm—tarsomere.

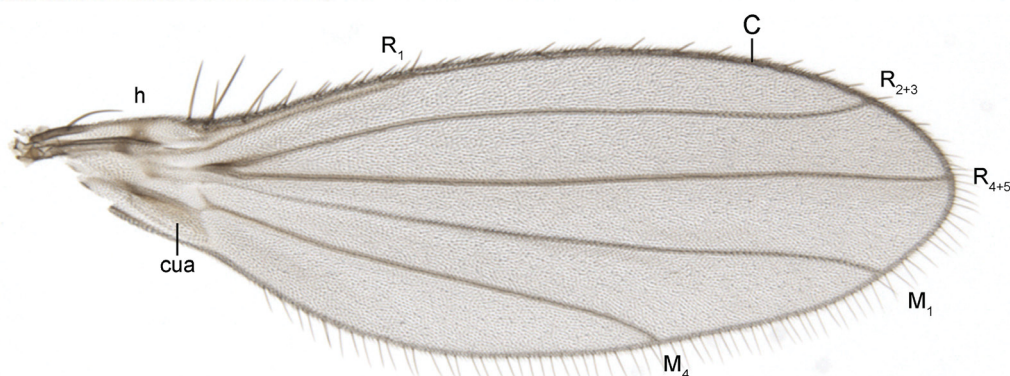
***Chimerothalassius* sp.**
(Figs 10, 17, 18, 19, 22)

Material Examined. **COSTA RICA:** Herradura, 21.X.1993, light trap (UV fluorescent on white sheet) at edge of ocean beach, A. Borkent, CD1628 (2♀, CNC); Caldera, 24.viii.1993, swept rocks amidst sand strip along ocean, A. Borkent, CD1548 (1♀, CNC).

Diagnosis. Minute (wing length 1.0–1.1 mm); head, thorax and abdominal tergites with dense grey pruinosity mostly covering brownish ground colour; abdominal sternites mostly pale and concolourous with adjacent membrane, sternite 6 with weak grey pruinosity; legs mostly pale or weakly infusate, tarsi infusate apically; setae of body and legs white; head with lower 5–7 postocular setae long; palpus large, broadly subtriangular, lacking



7 *C. runyoni* (sex unknown, Dominica)



8 *C. runyoni* (♀, Montserrat)

0.2 mm



9 *C. runyoni* (♂, Montserrat)



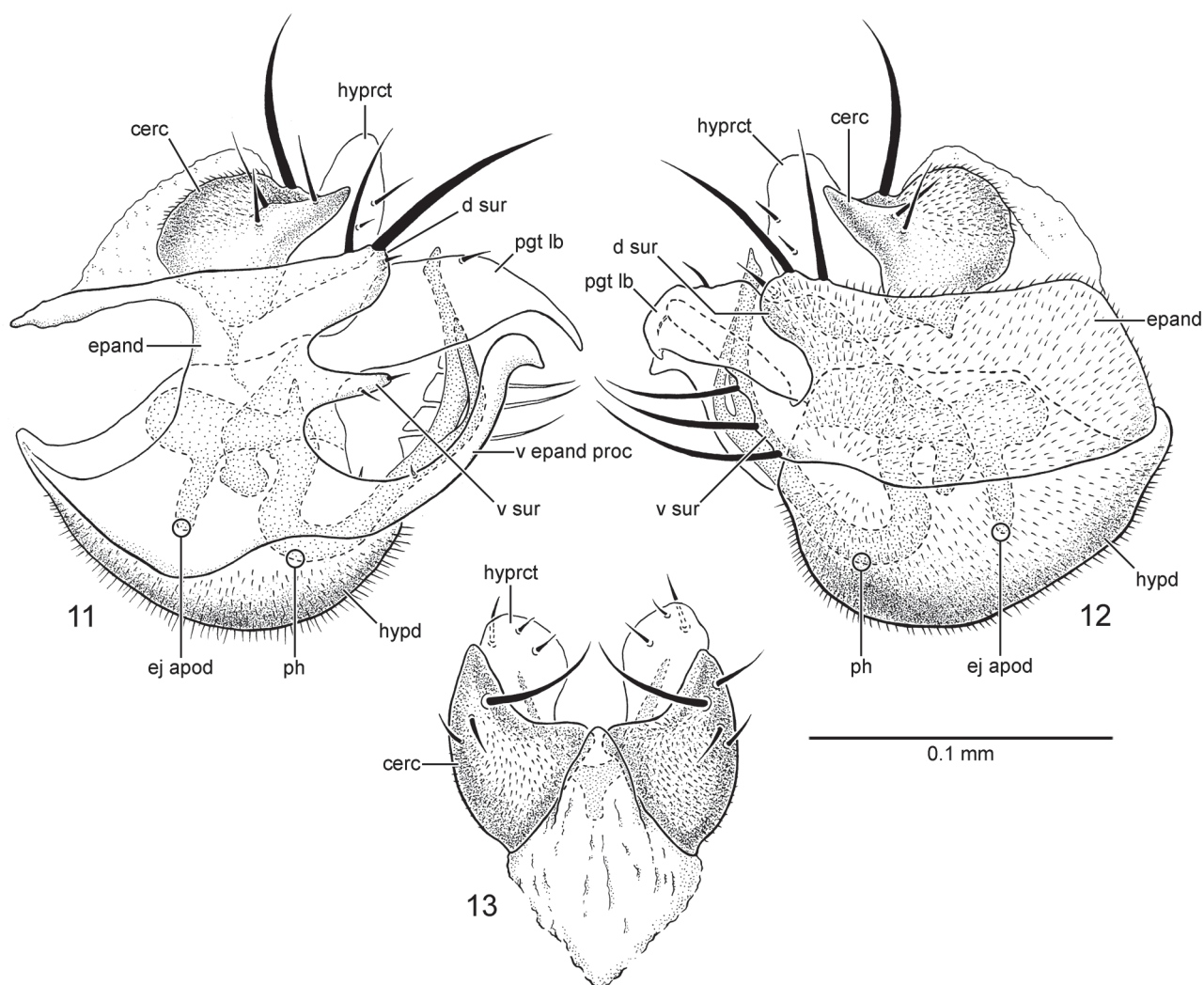
10 *Chimerothalassius* sp. (♀, Costa Rica)

FIGURES 7–10. Wings (dorsal surface). 7. *Chimerothalassius runyoni* sp. nov., specimen of unknown sex from Rodney's Rock, Dominica. 8. Same, female paratype from Woodlands Beach, Montserrat. 9. Same, male paratype from Woodlands Beach, Montserrat. 10. *Chimerothalassius* sp., female from Herradura, Costa Rica. Abbreviations: C—costa; cua—anterior cubital (=anal) cell; h—humeral crossvein; M₁, M₄—medial veins; R₁, R₂₊₃, R₄₊₅—radial veins.

ventral bristles; fore coxa with prominent setae on anterior surface, lower 2–3 setae long; fore femur with series of 3–4 long setae ventrally; wing about 2X longer than wide (Fig 10); costal section between R_{2+3} – R_{4+5} shorter than R_{4+5} – M_1 section; female terminalia with tergite 8 medially divided, narrowly fused with sternite 8 anterolaterally; tergite 10 divided medially with three acanthophorite setae on each broadly-tipped hemitergite; cercus with long apical seta and long lateral seta (Fig. 18); spermathecal duct an unsclerotized tube with broad ridged sperm pump in basal part and conical terminal expansion giving rise to sac-like spermatheca (Fig. 17). Male is unknown.

Distribution. This undescribed species is currently known only from two localities on the Pacific coast of Costa Rica (Figs 19, 22).

Remarks. Like the other known species of *Chimerothalassius*, this species appears to be associated with beach rocks, however the two specimens from Herradura were taken at a UV light trap placed near the shoreline.



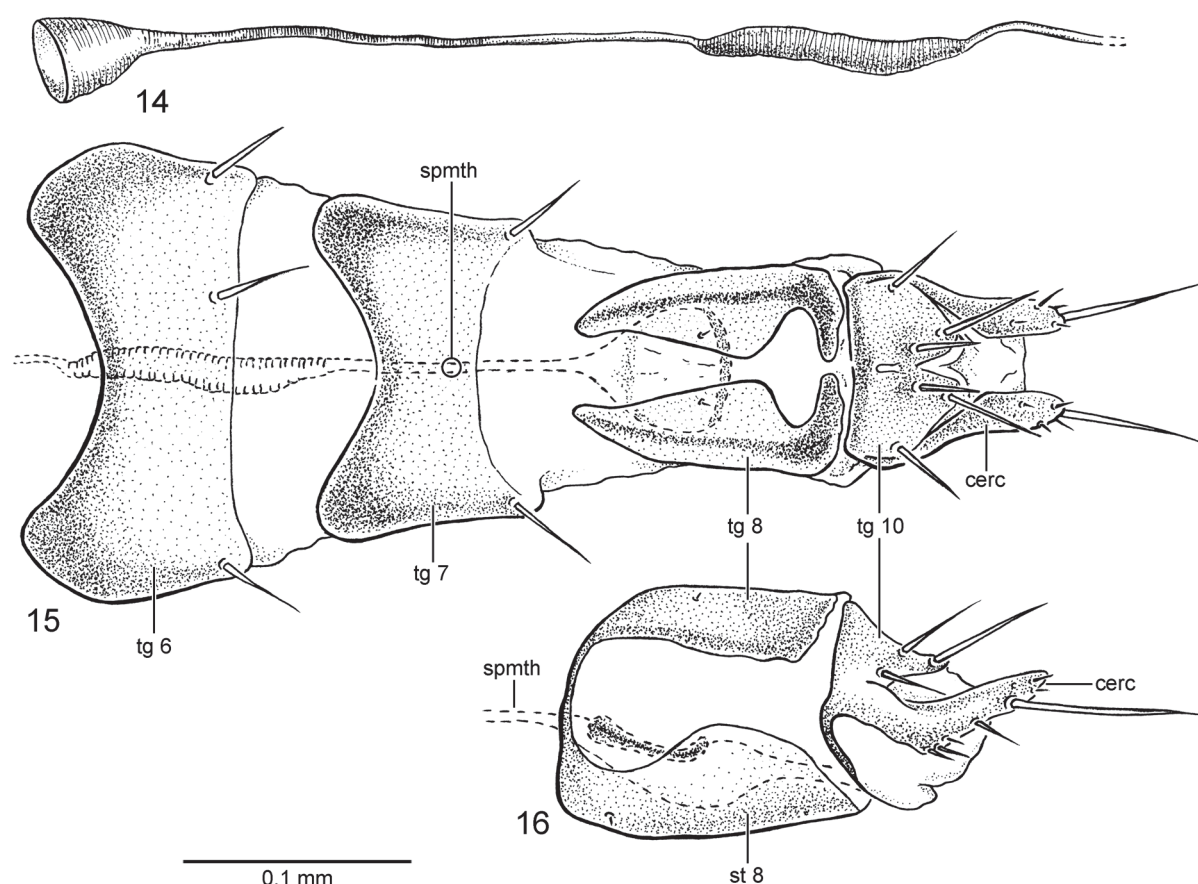
FIGURES 11–13. Male hypopygium of *Chimerothalassius runyoni* sp. nov. 11. Left lateral view. 12. Right lateral view. 13. Cerci, dorsal view. Abbreviations: cerc—cercus; d sur—dorsal lobe of surstylus; ej apod—ejaculatory apodeme; epand—epandrium; hypd—hypandrium; hyprct—hypoproct; pgd lb—postgonite lobe; ph—phallus; v epand proc—left ventral epandrial process; v sur—ventral lobe of surstylus.

Discussion

Chimerothalassius appears to be related to the Chilean parathalassiine genus *Neothalassius*, based on the synapomorphic loss of crossvein dm-m and vein M_2 , as well as possession of a medial apical projection on tarsomere 5 of each leg (Brooks & Cumming 2016). There are also two undescribed species from New Caledonia

(in CNC), which are somewhat intermediate between these two genera that also belong to this lineage. Southern hemisphere parathalassiine taxa with recently reported New World—Old World connections, as exhibited in *Chimerothalassius*, were discussed by Brooks & Cumming (2011). They speculated that these interesting patterns might be the result of relatively recent anemochore dispersal events through oceanic drift, or the result of much older relict Tertiary distributional patterns. However, given the small size of parathalassiine flies and their frequent association with poorly sampled coastal marine habitats, the unusual zoogeographic pattern displayed by *Chimerothalassius* with Caribbean, Costa Rican and New Zealand species, may be more a result of inadequate sampling of coastal habitats in intervening areas.

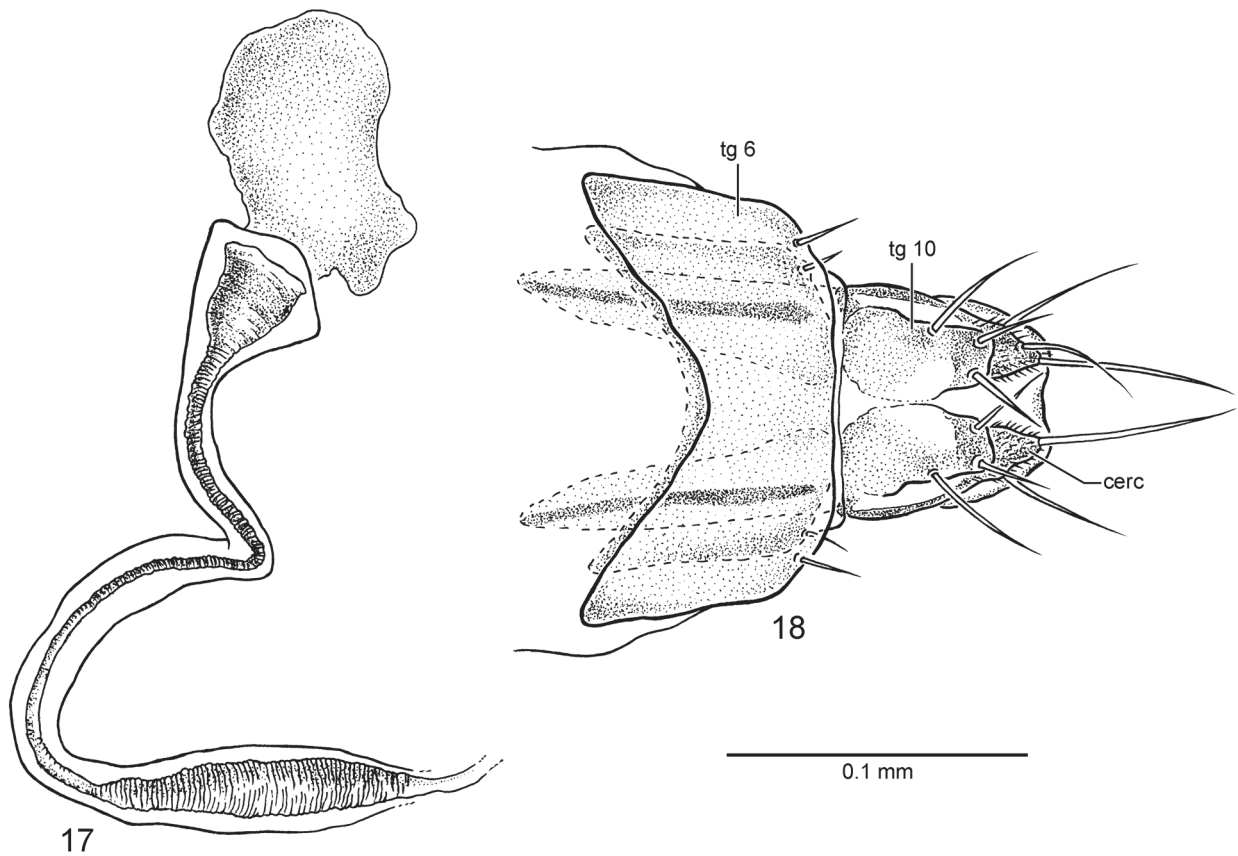
Additional work on New World *Chimerothalassius* should focus on obtaining more specimens of *C. runyoni* from the island of Dominica, particularly males. Mitochondrial COI sequence data taken from freshly collected specimens will also be useful in confirming whether the populations on Montserrat and Dominica are conspecific. A survey of rocky coastlines on the intervening island of Guadeloupe and other neighbouring islands in the Lesser Antilles, might detect additional specimens of *Chimerothalassius*. Serious collecting efforts along the Pacific coast of Costa Rica will also be required to reveal the male of *Chimerothalassius* sp., the tiniest known species in the genus.



FIGURES 14–16. Female terminalia of *Chimerothalassius runyoni* sp. nov. 14. Spermatheca. 15. Dorsal view. 16. Lateral view. Abbreviations: cerc—cercus; spmth—spermatheca; st—sternite; tg—tergite.

Acknowledgements

We thank Justin Runyon (U.S. Forest Service, Bozeman, Montana) for collecting the type series of *C. runyoni* and depositing the specimens in the CNC, and for his photo of the type locality at Woodlands Beach, Montserrat. We also thank Norm Woodley (USNM) and Steve Marshall (UGIC) for the loan of specimens. We acknowledge Art Borkent (Salmon Arm, British Columbia) for depositing the Costa Rican specimens of *Chimerothalassius* sp. in the CNC, and Brad Sinclair (CNC) who discovered them in the miscellaneous CNC Empidoidea holdings. Jessica Hsiung (CNC) skillfully inked Figures 3–6, 11–18. Brad Sinclair (CNC) and Igor Shamshev (St. Petersburg, Russia) provided helpful comments on the manuscript.



FIGURES 17–18. Female terminalia of *Chimerothalassius* sp. from Costa Rica. 17. Spermatheca. 18. Dorsal view. Abbreviations: cerc—cercus; tg—tergite.

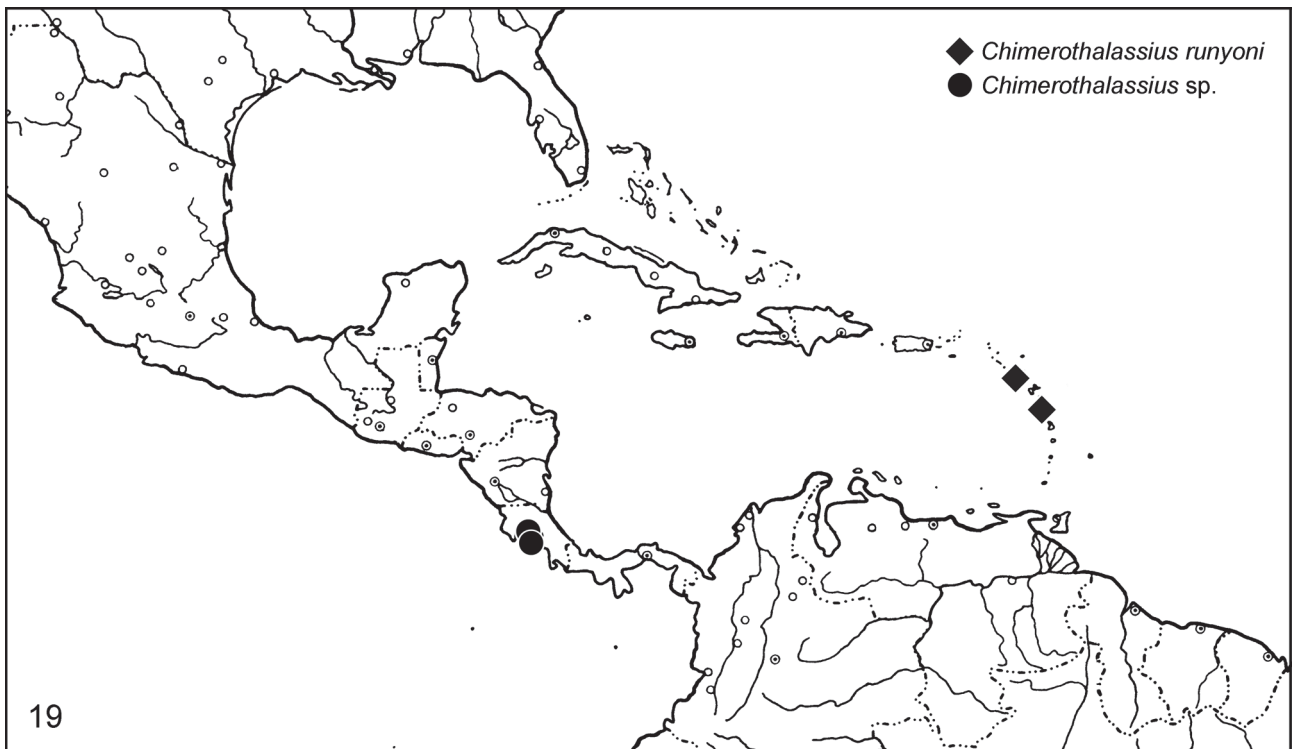
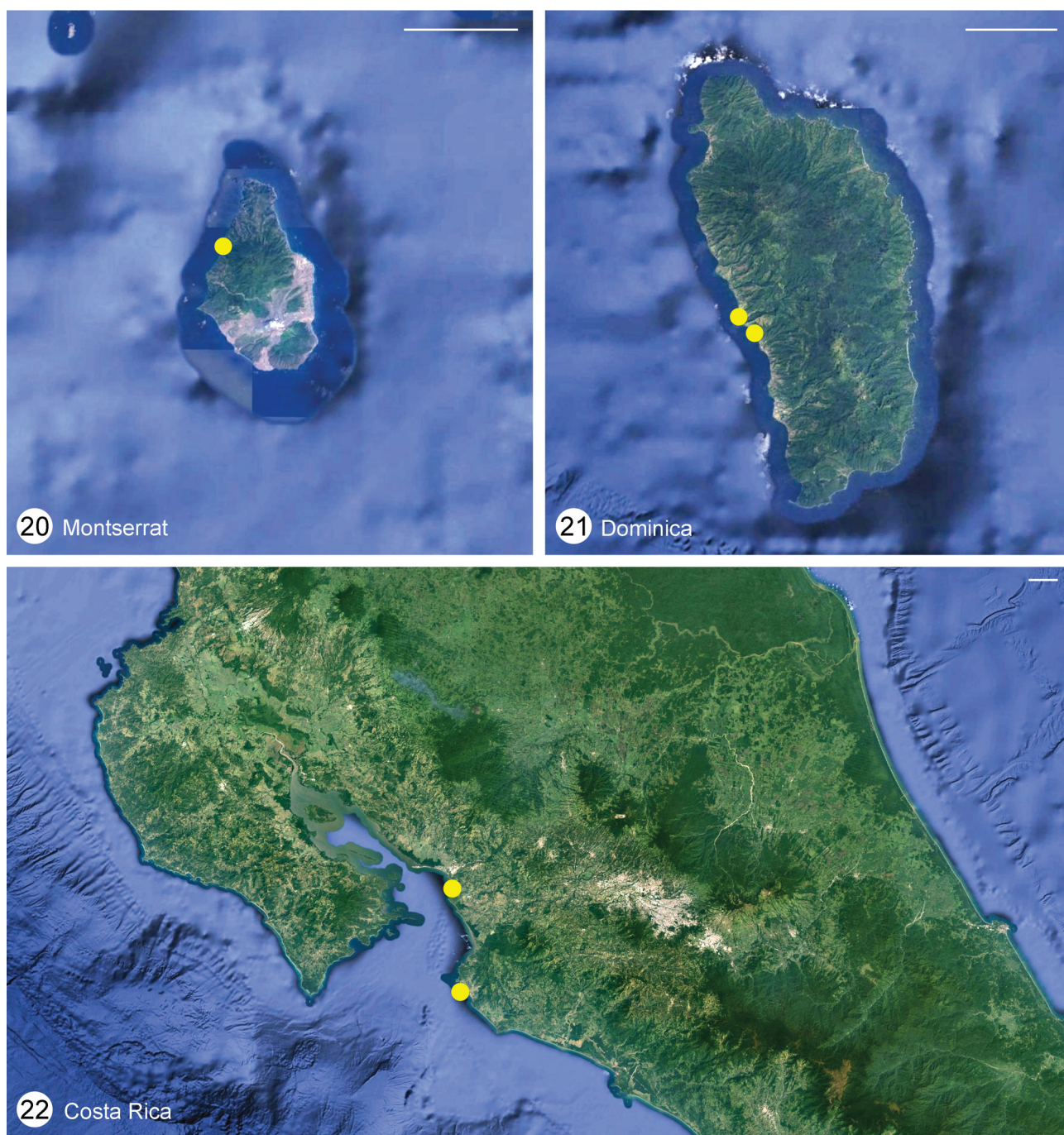


FIGURE 19. Known distribution of New World *Chimerothalassius* species.



FIGURES 20–22. Detailed distribution maps of New World *Chimerothalassius* species. **20.** Collection locality of *Chimerothalassius runyoni* **sp. nov.** on Montserrat. **21.** Collection localities of *Chimerothalassius runyoni* **sp. nov.** on Dominica. **22.** Collection localities of *Chimerothalassius* sp. on west coast of Costa Rica. Map data: Google, DigitalGlobe. Scale bar = 10 km.

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